FACTS ON FILE

EMSP

Environmental Management Science Program

Project Highlights

The Environmental Management Science Program (EMSP) is funding basic research projects focused on solving the most difficult problems that threaten the closure plans of DOE sites. This fact sheet highlights just one.

Mechanics of Bubbles in Sludges and Slurries

The objective of the research is to gain a fundamental understanding of the interactions between gas bubbles and tank waste during barometric pressure fluctuations. This understanding will have a direct influence on improving the accuracy of gas volume estimates for Hanford tanks from the nonintrusive level and pressure measurements. The elucidation of the bubble waste interactions should also provide more accurate models for estimating waste properties from level/pressure data and should quantify the effect of barometric pressure fluctuations on the slow release of bubbles.

Locations: Pacific Northwest National Laboratory, Lawrence Berkeley National Laboratory, University of Texas

Year of Award: 1997

Amount of Award: $1,132,000

Office of Environmental Management (EM) Problem Area: High Level Waste

Office of Science (SC) Scientific Category/Sub-Category: Engineering Science/Bubble Mechanics and Sonification

Research Value/Impact: The result of these studies will aid in eliminating foaminess in three-phase gas/liquid/solid systems, thereby significantly improving treatment of high level waste sludge and slurries, and will aid in obtaining accurate measurement of retained gas from level/pressure data thereby allowing more realistic evaluation of safety issues at high level waste sites.

Lead Principal Investigator:
Phillip A. Gauglitz
Pacific Northwest National Laboratory
(509) 372-1210

Other Principal Investigators:
Morton M. Denn
Lawrence Berkeley National Laboratory
(510) 642-0176

William R. Rossen
University of Texas
(512) 471-3246

More Information on the Web:
http://www.em.doe.gov/science or
http://www.id.doe.gov/emsystems/emsp